

PRESENT DISTRIBUTION OF THE BLACKBUCK *ANTILOPE CERVICAPRA* LINN. IN INDIA, WITH SPECIAL EMPHASIS ON THE LESSER KNOWN POPULATIONS¹

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(With a text-figure)

INTRODUCTION

The blackbuck or Indian antelope *Antelope cervicapra* Linn. is endemic to the Indian subcontinent, being present in India, Pakistan and Nepal. During the last few years its ecology and behaviour has been studied by many workers (e.g. Mungall 1978a, b, 1979, Ranjitsinh 1982a, b, Prasad 1983, 1984, Prasad and Ramana Rao 1984, Bhattacharya and Chattopadhyay 1984). Censuses in Pt. Calimere (Daniel 1967, Johnson 1975, Nair 1976, Natarajan *et al.* 1978), Velavadar (Rashid 1977) and states like Gujarat (Sinha and Chhabra 1985) and Andhra Pradesh (Ramana Rao and Prasad 1982) have been done. Ranjitsinh's (1982a) assessment based on the official data supplied by the Forest Department gives a picture of the all-India distribution of the blackbuck, but in many instances exact locations have not been given and/or the population estimates have become outdated. For example, in the Karera Bustard Sanctuary in Madhya Pradesh, Ranjitsinh reported 8 blackbuck, but according to the 1988 census the population is now more than 500. Similarly, during the last seven or eight years I have noticed many scattered populations which have not been reported anywhere (except perhaps in official files).

The enactment of the Wildlife (Protection) Act 1972 has provided better protection to many wildlife species, resulting in a localised increase in the population of some animals like the blackbuck in newly established protected areas. Under these circumstances, it was felt necessary to re-assess the present distribution and status of the blackbuck in India. The main emphasis of this paper is on the description of the lesser known populations. Wherever available, census data are given and in some cases updated. Only a brief reference is made to well-known blackbuck areas like Velavadar, Pt. Calimere, Guindy and Rannibennur.

STUDY PERIOD

This paper is a result of notes kept between 1981 and 1988 during our study on the Indian bustards. Blackbuck and the great Indian bustard *Ardeotis nigriceps* share common habitats, and as the bustard study involved much travel and surveys, I had the opportunity to visit a large number of blackbuck areas. All sightings of the blackbuck were noted. Additional information was gathered from the forest department, local people, naturalists and the existing literature. In many cases, census estimates are based on the information supplied by the Forest Department. As a proper census has not been done in all the areas, population counts are only approximate.

RESULTS

STATEWISE DISTRIBUTION OF BLACKBUCK

Uttar Pradesh: The blackbuck is very widely but thinly distributed in Uttar Pradesh, being present in at least 19 districts. Most of these populations are present in agricultural fields and grazing areas. It can also be seen in 6 out of 22 sanctuaries of the state (Table 1). According to R.P. Sharma, Chief Wildlife Warden of Uttar Pradesh, blackbuck are found in the following districts (population estimates in parentheses): Varanasi (90), Kanpur (35), Pilibhet (18), Lakhimpur Kheri and Shahjehanpur (40), Banda (21), Sitapur and Hardoi (51), Bijnor (75), Bahraich (82), Muzaffarnagar (50), Meerut (65), Aligarh (420), Bulandshahr (150) and Ghaziabad (10).

The total population comes to about 1100, which is slightly higher than Ranjitsinh's (1982) estimate of 941 to 1000 in 11 districts. However, Sharma has not included Etah and Mathura districts, where Ranjitsinh estimated 30 and 20 animals respectively. In both lists, Agra, Baduan and Etawah districts—where I know with certainty that blackbuck are still present—have been omitted. According to Prabhu Singh, Range Forest Officer, Mus-

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TABLE 1
PROTECTED AREAS IN UTTAR PRADESH WITH BLACKBUCK HERDS

Name	District	Area (sq. km)	Blackbuck numbers	Reference
Katemiaghat	Bahraich	400	20-30	Pers. observ.
Kaimur	Mirzapur	501	250	Forest dept.
Ranipur	Banda	243	No data	-do-
Hastinapur	Meerut, Bijnor Ghaziabad & Moradabad	2070	No data	-do-
Kishanpur	Lakhimpur Kheri	227	15-20	Pers. observ.
Sikandra *	Agra	0.5	32 in 1978	Pers. observ.

* captive herd

tufabad, Pilibhet, who belongs to Baduan district, 1000-2000 blackbuck are present in Asafpur block of Bisoli tehsil in Baduan district. If this estimate is true, this must be the largest population of the blackbuck in the state, and efforts should be made to protect it. Baduan district adjoins Aligarh, where Sharma has reported the largest population (420) in his recent estimate. Another unknown population is present in the Jamuna *Khader* of Orai Range of Babain section in Etawah district. Among the captive herds outside zoos, a small population is present in Sikandra near Agra. Schaller (1967) counted 128 in 1965, but the following year (1966) only 104 were left (Spillett 1966). In 1978-79, I counted only 32, a clear drop of 72.65% in 12 years.

Comparing the blackbuck numbers in protected areas (sanctuaries and national parks) and unprotected areas (agricultural fields), we find that more than 80% of the blackbuck in Uttar Pradesh are found outside protected areas, where the Forest Department has little control. In these areas the blackbuck survives either due to sentimental protection by villagers or because the terrain makes motorized hunting difficult. Uttar Pradesh being one of the former strongholds of this species, a more systematic survey of the whole state is urgently required. A blackbuck sanctuary in Aligarh-Baduan region should be established.

Bihar: The blackbuck is making a slow comeback in some areas of Bihar. According to Shahi (1971), in the olden days "herds of thousands were found in the forests of Champaran and Shahabad but now a small population in some areas of Shahabad is fighting its last battle for survival". Fortunately, the picture is not so grim now: Ranjitsinh (1982a) estimated a population of 30 to 40 in the Shahabad area. However, according to the latest information given to me by Amar Prasad, Division Forest Of-

ficer, Purnea, blackbuck are present in large numbers in Buxar and Sasaram areas of south-east Bihar and due to crop damage, the Forest Department wants to translocate them to Khaimur plateau, where some animals are already present in open country between Jamgaon and Rajpur villages. The Bihar Government is also planning to develop a wildlife sanctuary in the Khaimur plateau like the one in the adjoining areas in Uttar Pradesh. Rodgers and Panwar (1988) have suggested creating a small 10 sq. km blackbuck refuge in a cropland/wasteland area near the Ganga river in Rohatas district.

Madhya Pradesh: The blackbuck is widely distributed in Madhya Pradesh and in many sanctuaries like Karera, numbers have increased during the last ten years. Ranjitsinh (1982a) found it to be present in eight sanctuaries and national parks and 12 districts. He estimated a population of 1300 in the whole state. Some of his data, based on the information supplied by the Forest Department, is not correct. For instance, he reported a population of 8 blackbuck in the Karera Bustard Sanctuary, but my estimate is that not less than 50 were present in 1982 and now the population is ten times as high.

Presently blackbuck are seen in 15 sanctuaries and national parks (Table 2) in Madhya Pradesh. They are seen in the following districts: Shivpuri, Gwalior, Morena, Ujjain, Dhar, Chhatterpur, Rajnandgaon, Raisen, Hoshangabad, Mandsaur, Vidisha, Guna, Damoh, Narsinghpur and Shahdol. Some of the sanctuaries mentioned in Table 2 are in these districts, but the blackbuck is also seen outside protected areas. Like in other states, no systematic survey has been done for the whole of Madhya Pradesh but population estimates for some sanctuaries like Kanha, Narodehi, Karera, Ghatigaon and Kunu-Palpur are available (Table 2).

TABLE 2
BLACKBUCK POPULATION IN THE PROTECTED AREAS IN MADHYA PRADESH

Name	District	Area (sq. km)	Year of census	Blackbuck numbers	Reference
1. Karera	Shivpuri	202	1988	500-600	Pers. observ.
2. Kunu-Palpur	Shivpuri	345	1986	60-80	Pers. observ.
3. Ghatigaon	Gwalior	512	1988	100-150	Pers. observ.
4. Narodehi	Sagar	1186	-	466	Ranjitsinh (1982a)
5. Bagdara	Sidhi	478	-	313	Ranjitsinh (1982a)
6. Kanha	Mandla	940	1986	30	Pandey <i>et. al.</i> (1986)
7. Panna	Panna	543	1987	35-40	Forest Dept.
8. Chambal	Morena	3902	-	113	Ranjitsinh (1982a)
9. Sanjay	Sidhi-Sarguja	1938	-	No census data	Forest Dept.
10. Samarsoth	Sarguja	430	-	-do-	-do-
11. Son-Gharial	Sidhi-Shahdol	209	-	-do-	-do-
12. Tomar-Pingla	Sarguja	608	-	-do-	-do-
13. Ratapani	Raisen	689	-	-do-	-do-
14. Singhora	Raisen	288	-	-do-	-do-
15. Kheoni	Dewas-Sehore	123	-	-do-	-do-

TABLE 3
SOME SCATTERED BLACKBUCK HERDS OUTSIDE THE PROTECTED AREAS IN MADHYA PRADESH

Name	District	Blackbuck numbers	Source	Remarks
Pipla- Agar taluka	Shahjapur	15-20	Forest Dept.	
Gautampura & Choddal villages in Badnagar taluka	Ujjain	100 (?)	Pers. observ.	Visited on 12 Sept. 1986 and saw many tracks
Kater Khera, close to Narbada river in Kuksi Range	Dhar	5	Range Forest Officer, Sailana	May 1986
Kotha plantation in Saleha Range	Panna	30-40	Forest Dept.	Visited on 5 Jan. 1988
Near Sumer between Bina and Bhopal	Vidisha	5	Q. Qureishi (1988 per. comm.)	Seen from the train on 23 July 1988.

TABLE 4
BLACKBUCK HERDS IN THE PROTECTED AREAS OF ORISSA

Name	District	Area (sq. km)	Blackbuck numbers	Reference
Balukhand-Konark	Puri	150	-	
Bhetonoi-Parushottampur	Ganjam	-	485	Patnaik & Acharjyo (1985)
Bhitarkanika	Cuttack	650	13 *	L.N. Acharjyo (1988, <i>in litt.</i>)

*Introduced

Orissa: Once found in all the suitable plains, the blackbuck in Orissa survives only in two districts: Balukhand and Chilka ranges of Puri district and Bhetonoi and Purushottampur areas of Ganjam district. According to a census conducted in 1980 in Bhetonoi and Purushottampur areas, 485 were counted (Patnaik and Acharjyo 1985). The Orissa government has declared a 150 sq. km coastal sanctuary called Balukhand-Konark Wildlife Sanctuary to protect the blackbuck and other

wildlife. In the Bhitarkanika wildlife sanctuary, in order to build up a blackbuck stock, five (2 males and 3 females) were released in November 1985 from a captive herd of the Nandankanan Biological Park (L.N. Acharjyo, 1988 *in litt.*). In March 1987, another nine (7 males and 2 females) were released, out of which one died.

West Bengal: At present there is only one known area where blackbuck survive after being introduced more than 20 years ago. According to Bhat-

TABLE 5
BLACKBUCK NUMBERS IN PROTECTED AREAS OF ANDHRA PRADESH

Name	District	Area (sq. km)	Blackbuck numbers	Reference
Pranahita	Adilabad	136	No data	Forest Dept.
Etumagaram	Warangal	803	-do-	-do-
Kinnerasani	Khammam	623	-do-	-do-
Nagarjunsagar -Srisailem	Guntur, Kurnool, Mehboobnagar, Nalgonda, Prakasan	3568	-do-	-do-
Rollapadu	Kurnool	6	40	Manakadan & Rahmani (1989)
Pakhal	Warangal	860	-do-	Forest Dept.
Mahavir Hiran Vanasthali *	Hyderabad	3.4	100	Forest Dept.

*Captive population

TABLE 6
BLACKBUCK HERDS OUTSIDE THE PROTECTED AREAS IN ANDHRA PRADESH

Name	District	Area (sq. km)	Blackbuck numbers	Reference
Mudmal	Mehboobnagar	80	95	Prasad & Ramana Rao (1990)
Mogullur	Prakasan	25	61	-do-
Sectarampuram	Prakasan	20	62	-do-
Guttumela	Khamman	10	8	-do-
Bayyaram	Khamman	20	25	-do-
Ravulapalam	West Godavari	25	56	-do-
Kedarlanke & Mudinanipalli	West Godavari	30	66	-do-
Kanigiri	Nellore	-	100	Forest Dept.
Kurichedu	Guntur	-	-	-do-
Grasslands of Punganoor Forest	Ranga Reddy Chittor	-	-	-do-
Settur plantation near Kalyandurg	Anantapur	-	4 seen in one day	B.C. Chowdhury (pers. comm.)
Negalapuram	Anantapur	-	1 male and 1 female	K.P. Muniswamy (1988, <i>in litt.</i>)
Maremmagude	Anantapur	-	1	-do-
Mallegeli near Alur	Kurnool	-	4 (3 males, 1 female)	-do-
Kalichedu near Nelapattu	Nellore	-	1 male	R. Manakadan (1987 pers. comm.)
			3	Members of Madras Naturalist's Society (<i>Blackbuck</i> Vol. 4: 2, 1988)

tacharya and Chattopadhyay (1979), in 1955 an approximately 203 acre tract of eroded and barren laterite tract under the Ballavpur Forest Range, close to Shantiniketan, was afforested. About 100 acres were fenced to establish a "Deer Conservation Unit". In 1967, four male and seven female blackbuck were introduced, which increased to 54 by 1975. At present the population is estimated to be 140.

Andhra Pradesh: Ramana Rao and Prasad (1982) and Prasad and Ramana Rao (1990) have listed areas

where blackbuck are distributed in Andhra Pradesh. However, a few lesser-known areas like Rollapadu in Kurnool district and Punganoor Forest Range in Chittor district have not been included by them. There are still more areas (see Table 6) in Guntur, Mehboobnagar, Khammam, Anantapur, Prakasan and Ranga Reddy districts where scattered herds of blackbuck are seen. Among the 16 wildlife sanctuaries in Andhra Pradesh, blackbuck are found in six (Table 5), excluding the captive animals in Mahavir Hiran Vanasthali near Hyderabad.

TABLE 7
PROTECTED AREAS IN KARNATAKA HAVING BLACKBUCK HERDS

Name	District	Area (sq. km)	Blackbuck number	Reference
Rannibennur	Dharwad	119	> 2000	Neginhal 1980; and pers. obs.
Melkote	Mandhya	50	No data	Forest Department
Adi Chunchanagiri	Mandhya	0.8	-do-	-do-
Chincholi	Gulbarga	80	-do-	-do-

Karnataka: Blackbuck in Karnataka have suffered a massive decline and disappeared from most areas. The largest extant population is present in the Rannibennur Blackbuck Sanctuary (Neginhal 1980, and pers. obs.) where nearly 2000 can be seen. In addition to Rannibennur, there are three more sanctuaries in Karnataka where blackbuck are present (Table 7).

According to the information collected by Ranjitsinh (1982a) isolated herds are seen in Mandhya, Tumkur and Bidar districts, but M.K Appayya (1988, *in litt.*) mentions only Mandhya, Dharwar, Gulbarga, Raichur, Bellary and Bijapur districts and not Tumkur and Bidar. It could not be confirmed whether the isolated herds in Tumkur and Bidar mentioned by Ranjitsinh (1982a) have disappeared or were overlooked by Appayya.

In Raichur district, on Raichur-Hyderabad road on the banks of the Krishna river, some blackbuck are present. Here the Krishna forms the boundary between Karnataka and Andhra Pradesh, and blackbuck can be seen on both sides. Ramana Rao and Prasad (1982) have mentioned this area in their report, and S. Sreevatsa (1987, pers. comm.) has seen 44 blackbuck in one day. The second area which appears to be unknown is Makri in Shimoga district, where P. Shroff (1988, pers. comm.) has seen 50 to 60 bucks in April 1987. The area is flat and under agriculture fields.

Tamil Nadu: In Tamil Nadu, Pt. Calimere Wildlife Sanctuary and Guindy National Park are two well-known blackbuck areas. It is not so well-known that there are more areas in this state which may have a population of more than 500 blackbuck.

1. Sujjalkatte Sanctuary (Proposed): Sujjalkatte is on the eastern side of the Nilgiris, and the blackbuck is found in a 10 sq.km flat and degraded area between Mangalpathi and Bhavani Sagar in the Sathymangalam range (N. Sivaganesan 1988,

pers. comm.). According to the Forest Department estimate there are now 400 antelopes in that area. Earlier, Ranjitsinh (1982a) had reported 150 to 200 blackbuck. According to Sivaganesan's estimate there are nearly 300 animals. In a day's trip he saw 57.

2. North Arcot district: Rajasingh (1984) has described a dramatic increase of blackbuck population from five individuals in 1968 to 92 in Al-liyalamangalam Reserve Forest, about 145 km south-west of Madras city.

3. Tirunelveli district: Ranjitsinh (1982a) reported a population of 30 animals in Vallanadu Reserve Forest in Tirunelveli district, but according to the District Forest Officer (1988 *in litt.*) the population has gone up to 100 in the reserve area of 2054 ha. There is a proposal to set up a blackbuck sanctuary in Vallanadu.

Maharashtra: There are at least a dozen lesser known areas in Maharashtra where blackbuck are present. In some places like Nanaj, Karmala and Kasegaon in Solapur (Rahmani and Manakadan 1989) and Rekhuri in Ahmednagar (E. Bharucha 1988, pers. comm.) the blackbuck population has gone up considerably and is causing crop damage. Ranjitsinh (1982a) reported its occurrence in Osmanabad, Bhir, Parbhani, Nanded, Solapur, Ahmednagar and Wardha districts and estimated a total of 1000 blackbuck in the whole state. Ramana Rao and Prasad (1982) found it occurring in Yeotmal, Bhir, Parbhani, Nagpur, Ahmednagar, Amravati and Wardha. Strangely, Solapur district, where the largest number of blackbuck in the whole state are seen, was omitted by them.

Owing to habitat restoration and effective protection under the Drought Prone Areas Programme (DPAP) and various afforestation schemes, the blackbuck is repopulating many areas and can sometimes be seen from the national high-

TABLE 8
BLACKBUCK POPULATIONS IN VARIOUS DISTRICTS OF MAHARASHTRA

District	Important areas/taluk	Total Population	Remarks	Reference
Solapur	whole district	3300	—	Pers. observ. & Forest Dept. records
Ahmednagar	Karjat, Shrigondha, Parner and Jhamkhed talukas	500-600	250-300 in Rehkuri	Pers. observ. & Forest Dept. records
Aurangabad	Near Kasota village in Kannad taluka	10-15	Seen in silviculture plot of 25 ha	Forest Dept.
Osmanabad	Umarga, Bhoom, Paranda and Tuljapur talukas	No data	180 seen in Gangaivadi plot on 11 July 1988	Pers. observ.
Beed (= Bhir)	Near Naigaon in Goirai taluka	'few'	—	Forest Dept.
Sangli	Jath, Kawthimankal, Islampur and Khanapur talukas	No data	'scattered herds'	-do-
Pune	Dhaund, Indapur, Baramati, Shirur and Purandhar	No data	'scattered herds'	-do-
Nanded	Hingola and Kinwat talukas	No data	-do-	-do-
Buldana	Malkapur taluka	No data	Proposal to develop a sanctuary of dry grassland ecosystem	Rodgers & Panwar (1988) and Forest Dept.
Akola	Karanja, Murtijapur and Chickalchalwal talukas	100-150	Potential to develop a blackbuck sanctuary in Karanja taluka	-do-
Amravati	17 km from Amravati on Yeotmal road	18-20	Seen in winter of 1986	Karkare (1988 pers. comm.)
	Near Borgaon on Akola road	4	Seen in winter of 1986	-do-
Bhandara	Margi area	50		P. Job (1988 pers. comm.)
Yeotmal	Wani forest in Tipeshwar	No data	Proposal to develop a blackbuck sanctuary in 225 sq. km	

ways. For example, on 24 October 1984, seven animals were seen by me on Pune-Solapur highway, about 17 km before Solapur. Similarly, P. Gole (1988, pers. comm.) in January 1988 saw three blackbuck from a bus between Jhamkhed (in Ahmednagar district) and Beed (=Bhir). The total blackbuck population in Maharashtra may be between 4500 and 5000, with Solapur district having more than half the total (Table 8).

Punjab: The plains of Punjab (and Haryana) were some of the chief strongholds of the blackbuck in north India. Even 30 years ago, it was found in Ferozpur, Faridkot, Ludhiana, Ropar, Bhatinda and Sangrur districts, but now the blackbuck survives only in Abohar area in Faridkot, where up to 3500 can be seen (Parshad 1984). The blackbuck around 13 Vishnoi villages covering an area of 182 sq. km were given full protection in 1982 in deference to the demands by the Vishnois that their antelopes be

saved (Singh 1984). In all other places in Punjab the blackbuck is extinct, except for some semi-captive herds in Chhat Bir near Chandigarh, Bir Motibagh Patiala and Bir Gurdial Pura.

Haryana: The largest recorded herd of 10,000 blackbuck was seen in a grassland in Hissar district in Haryana (Jerdon 1874). In 1955 and 1956, Ranjitsinh (1982a) saw "sizeable herds in the same tract, including one of over a hundred in sight of Hissar town. By 1961, there were no signs of blackbuck on the same ground". However, H. Dang (1964) reported seeing over a hundred blackbuck in the Hissar area, and added "reports would put the figure at thrice that number". He also estimated about 300 in *Khader* area of Ferozpur, 100 in Rewari, and 300 in Kapurthala. According to R. Dang (1988, pers. comm.) there are three blackbuck refuges, and a population of about 400 animals is present at some distance from Sultanpur Bird Sanctuary in Gurgaon

TABLE 9
BLACKBUCK HERDS OUTSIDE PROTECTED AREAS IN GUJARAT

Name	District	Blackbuck numbers	References
Kadi	Mehsana	> 300	A. Daga (1988 pers. comm.)
Latuda-Katuda	Surendranagar	> 200	Y. Jhala (1988 pers. comm.)
Karara (Wandhwan to Limdi)	Surendranagar	> 10	-do-
Wandhwan	Surendranagar	15	-do-
Little Rann	Surendranagar and Kutch	300	Sinha & Chhabra (1985)
Dhankaniya veedi Botad taluka	Bhavnagar	350	Sinha & Chhabra (1985) and Pers. observ.
Near Port Victor	Bhavnagar	40	Sinha & Chhabra (1985)
Umavadi veedi in Gondal	Rajkot	10-15	Upadhyay (1988 pers. comm.)
Near Rajula	Amreli	40	Sinha & Chhabra (1985)
Near Damnagar	Amreli	20	-do-
Near Lathi	Amreli	15	-do-
Near Jhajmar	Junagadh	25	-do-
Near Kotda	Junagadh	50	-do-
Sunderpura	Vadodra	350	Oza (1978) and Rahmani & D'Silva (1984)
Kandoma Rana	Porbander	40 seen in one day	Mohile (1981)

TABLE 10
PROTECTED AREAS IN RAJASTHAN WITH BLACKBUCK POPULATIONS

Name	District	Area (sq. km)	Year of census	Blackbuck numbers	Reference
Keoladeo	Bharatpur	29	1987	18	Haque (1988)
Talchapper	Churu	7	1986	1400	Pers. observ.
Gajner	Bikaner	25	1981	575	Forest Dept.
Sorson	Kota	40	1988	80-100	Pers. observ.
Guru-Bishnonian	Jodhpur	425	1987	6163	S. Sharma (pers. comm.)
				3-4000	Prakash (1988)
Dhawa-Doli	Jodhpur	470	1987	3000	-do-
Sathri	Jodhpur	245	1987	'few'	Forest Dept.

district. There is a proposal to establish a blackbuck sanctuary near Sirsa among 12 to 13 villages dominated by the Vishnoi community, who do not kill these antelopes (G. Singh, 1989 pers. comm.).

Gujarat: The Velavadar National Park in Bhavnagar district is one of the most famous protected areas for blackbuck in India. It was specially created in 1969 for the protection of this antelope. Not many people know that there are more than a dozen other places in Gujarat where blackbuck can be seen. In four such areas, the population of blackbuck is more than a hundred each. Ranjitsinh (1982a) estimated that the total blackbuck population in Gujarat may be 3300 to 3500, while Sinha and Chhabra (1985) estimated 3295 blackbuck in the whole state. In some areas like Kadi in Mehsana the population has

gone up. For example, Sinha and Chhabra (1985) reported only 75 blackbuck but in October 1987, A. Daga (1987, pers. comm.) saw nearly 300. Similarly, a few places like Latuda-Katuda and Umvadi veedi in Gondal where blackbuck are seen were not mentioned by Ranjitsinh (1982a) or by Sinha and Chhabra (1985). Therefore a fresh assessment of the blackbuck population in Gujarat should be done.

Rajasthan: Among the Indian states the highest number of blackbuck are present in Rajasthan. Ranjitsinh (1982a) estimated between 7600 and 8000 blackbuck in the whole of Rajasthan, but according to the recent census done by the Forest Department, in Jodhpur district alone, nearly 10,000 are found in Guru-Bishnonian and Dhawa-Doli areas (S. Sharma 1987, pers. comm.) However, S.P. Goyal (1988,

TABLE 11
BLACKBUCK HERDS OUTSIDE THE PROTECTED AREAS IN RAJASTHAN

Name	District	Date of sighting	Estimated No.	Reference/Source
Raja-Kheri ravine	Dholpur	—	10-15	Forest Dept.
Khamer to Sareri	Bhilwara	—	> 150	Forest Dept.
50 Km from Jodhpur on Pali road	Pali	26 July 1987	> 100	Pers. obs.
Dudli in Rohat	Pali	26 July 1987	150-300	Pers. obs.
Near Omkali	Pali	26 July 1987	10-12	Pers. obs.
Raniwara	Jalore	—	'few'	S.P. Goyal (1988 <i>in litt.</i>)
Near Johdi	Alwar	—	400	Rodgers & Panwar (1988)
Lamba	Jodhpur	22 Jan. 1987	150-200	Pers. obs.
Near Banai	Jodhpur	22 Jan. 1987	10-15	Pers. obs.
Near Diyatra	Bikaner	22 Jan. 1986	11	Pers. obs.
Raisinghnagar	Bikaner	—	2000(?)	Forest Dept.
Ranipur	Tonk	—	100	Forest Dept.

TABLE 12
NEW PROTECTED AREAS WHERE BLACKBUCK POPULATION HAS INCREASED

Name	Earlier population estimates	Recent population estimates	Reference
Karera Bustard Sanctuary	50-60 in 1982	500-600 in 1988	Pers. obs.
Ghatigaon Bustard Sanctuary	20-25 in 1982	100-150 in 1988	Pers. obs.
Sorson Closed Area	15-20 in 1983-84	80-100 in 1988	Pers. obs.
Nanaj	150-200 in 1981	600-800 in 1988	Pers. obs.
Kasegaon (Gangiwadi)	25-35 in 1983	180-210 in 1988	Pers. obs.
Rehkuri Blackbuck Sanctuary	70-80 in 1982	250-300 in 1987	Pers. obs.
Rollapadu Bustard Sanctuary	10-12 in 1984	38-40 in 1988	Pers. obs.
Ballavpur Forest	11 in 1967	140 in 1988	Bhattacharya & Chattopadhyay (1979) and Forest Dept.
Alliyalamangalam	5 in 1968	92 in 1982	Rajasingh (1984)
Vellanadu	30 in 1981	100 in 1988	Ranjitsinh (1982a) and Forest Dept..

pers. comm.) feels that the population is not so high. Apart from Jodhpur, the blackbuck is seen in Kota, Ajmer, Pali, Bikaner, Churu, Ganganagar, Bharatpur, Dholpur and Bhilwara districts (Tables 10, 11).

DISCUSSION

Ranjitsinh (1982a) estimated the total blackbuck population in India to be between 22,000 and 24,000. Since then the population has increased, especially in newly created protected areas like Karera, Ghatigaon, Nanaj and Rehkuri (Table 12). According to my rough estimate, the blackbuck population may now be between 29,000 and 38,000. This large gap between the maximum and minimum population estimates is mainly due to the rather questionable official and non-official figures.

It is clear from Table 13 that the population increase during the last decade is seen not in the im-

portant sanctuaries like Pt. Calimere, Velavadar and Rannibennur (which were specially created for the protection of this species), but in newly created sanctuaries like Karera, Rollapadu, Rehkuri and Nanaj. In some of the important blackbuck sanctuaries the population has actually gone down (e.g. Pt. Calimere).

In protected areas such as Karera and Nanaj, and Vishnoi areas of Rajasthan, the blackbuck is seen in private fields where the Forest Department has not much control on the land use. As emphasized by Rodgers and Panwar (1988) such areas have a dubious long-term wildlife value and should not be taken as a guarantee for the safety of a species. Occurrence of blackbuck in cultivated areas and the resultant crop damage may even result in development of a negative attitude towards conservation, thus jeopardizing the future of such populations.



Fig. 1. Present sight records of blackbuck in India

Similarly, survival of blackbuck in isolated pockets in the highly populated districts of Uttar Pradesh or Bihar may not be guaranteed forever, especially when the human population is still increasing and habitat alteration is accelerating everywhere.

Though there may be more than a thousand blackbuck in Uttar Pradesh, more than 80% of the population survives in areas which may in future not remain suitable for the species. Therefore the opinion that populations have increased so much

that the blackbuck should be removed from Schedule I of the Wildlife (Protection) Act is not tenable: it is not that the species is threatened, but that the habitat which it occupies is in danger of further alteration. Unless the habitat is protected, there is no long-term guarantee of the species' survival. Therefore, in my opinion, the blackbuck should remain in Schedule I and some more areas should be identified to be developed as blackbuck sanctuaries.

Rodgers and Panwar (1988) have shown that

TABLE 13
POPULATION ESTIMATES OF BLACKBUCK IN WELL-KNOWN SANCTUARIES

Name	Year of census	No. of blackbuck	Reference
Pt. Calimere	1967	750-800	Daniel (1967)
	1971	970	Johnson (1975)
	1974	340	Nair (1976) (see Johnson (1982) for contradiction of census figures)
	1977	506 (actual count)	Natarajan <i>et al.</i> (1978).
	1980	1100	Forest Dept. (in Ramana Rao & Prasad 1982)
Kanha	1988	550	Alagar Rajan <i>et al.</i> (in prep.)
	1965	21	Schaller (1967)
	1972	90	Martin (1977)
Keoladeo	1986	30	Pandey <i>et al.</i> (1986)
	1965	70	Spillett (1968)
	1980	24-26	Pers. observ.
Velavadar	1987	18	Haque (1988)
	1969	c. 400	Rashid (1977)
	1977	1678	Rashid (1977) & Dharmakumarsinhji (1978)
	1985	2000	Sinha & Chhabra (1985)
Rannibennur	1989	900	A. Jhalla (Pers. comm.)
	1958	'very few'	Neginhal (1980)
	1970	c. 600	-do-
	1974	1000	-do-
	1979	2794	Forest Dept.
	1981	2500	Karant & Singh (1981)

TABLE 14
STATE-WISE POPULATION ESTIMATE OF THE BLACKBUCK

State	Population estimate	Major strongholds
Punjab	3500-4000	Abohar in Faridkot district
Haryana	400	Gurgaon district
Uttar Pradesh	1000-2000	Aligarh and Baduan(?) districts
Bihar	50-100	Kaimur plateau
Madhya Pradesh	1500-2000	Karera, Narodehi and Bagdara
Orissa	500-600	Bhetonoi and Balukhand
West Bengal	140	None
Andhra Pradesh	800-1000	Mehboobnagar, Prakasan and West Godavari districts
Karnataka	2000-3000	Rannibennur
Tamil Nadu	1500-1600	Pt. Calimere and Guindy
Maharashtra	4500-5000	Solapur and Ahmednagar districts
Rajasthan	10000-15000 (?)	Dhawa-Doli and Guru -Bishnonian in Jodhpur and Tal Chhaper in Churu
Gujarat	3500-4000	Velavadar, Sunderpura and Botad

blackbuck exist in significant numbers in less than five national parks and five sanctuaries, and that there are only three protected areas with a population of more than 1,000 animals. They have listed only Velavadar, Pt. Calimere (see Table 13 for contradictory data) and Tal Chhaper. Rannibennur in Karnataka and Vishnoi areas of Rajasthan have been omitted, though for the latter it can be argued that they are not true protected areas as the land does not

belong to the Forest Department. However, keeping in mind the fact that the largest populations of blackbuck exist in the Guru-Bishnonian and Dhawa-Doli areas of Jodhpur, such populations cannot be overlooked, no matter what the existing status of their habitat.

Prakash (1990) has expressed the apprehension that with increasing crop damage by ungulates in Jodhpur area, determination among the Vishnoi

community to protect the blackbuck may decline. He has suggested translocating excessive blackbuck to those areas where they were common a few decades ago. The necessity of translocating blackbuck or chinkara *Gazella bennetti* from Vishnoi areas may not arise in the foreseeable future as they (Vishnoi) are still aggressively protective of these species on religious grounds; but this is becoming a major management challenge in areas such as Karera, Rehkuri and Nanaj, where the blackbuck has increased due to effective protection by the Forest Department and not due to any sentimental reasons or religious taboos on killing of antelopes. Crop damage by blackbuck is a major issue in such sanctuaries.

Once the tolerance level of the local agriculturists is crossed, the conservation movement may receive a setback, and in a democratic set up the blackbuck and its defenders may not find many supporters. Instead of delaying any further, the government should evolve a policy on management of locally abundant threatened species. Studies on capture and safe translocating of ungulates should be started and new areas should be identified where the animals could be released.

Although translocating a few hundred blackbuck is not easy, we must try this and other alternative methods before we think in terms of culling the excessive population. Flamand (1989) reported that in Natal, South Africa, the capture unit of the Natal Parks Board caught and translocated close to 4,000 head of game per year. The majority of these animals were ungulates. I suggest that in India also, from

total *in situ* protection, the wildlife department should evolve active wildlife management programmes. Translocation of wildlife, from locally abundant populations or to provide genetic vigour to depleted populations, should become an important management tool in future.

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